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DRAFT PROTOCOL
ENVIRONMENTAL MONITORING OF ERADICATION PROJECTS
WHICH USE METHYL EUGENOL

I. INTRODUCTION

The California Department of Food and Agriculture Division of Plant Industry uses methyl eugenol as a fruit fly attractant during trapping and eradication programs. This chemical has been chosen for further study by the federal government because of its similarity to other oncogenic chemicals. In response to the expressed perception that many people may be exposed to methyl eugenol during eradication programs, CDFA has decided to monitor an eradication program to determine the ambient air level of the chemical, if measurable, during and after typical applications.

II. OBJECTIVE

Our objective is to determine the ambient air level of methyl eugenol in neighborhoods where eradication programs are ongoing during 1988.

III. PERSONNEL

Ambient air monitoring will be conducted by the Calfornia Department of Food and Agriculture's (CDFA) Environmental Hazard Assessment Program (EHAP). Key EHAP personnel are listed below:

Bonnie Turner - Project leader
Sally Powell - Experimental design, statistical analysis
Karen Wiese - Field group coordinator
Nancy Miller - Laboratory liaison/quality control
Duc Tran - Chemistry lab coordinator

IV. MONITORING DESIGN

Monitoring will begin whenever EHAP is notified of an eradication program starting up within the State of California after the pilot program has been completed. Ambient air samples in the vicinity of the eradication bait stations will be collected over the eradication program or until proof of non-detectable levels of pesticides occurs at the treatment sites. If several eradication programs are underway in the state at the same time, only one will be monitored.

A maximum of four bait stations will be randomly selected from the eradication area. A high volume air sampler will be set up near each selected station. Air samples will be collected at three times following the first and last application of bait, tentatively at 0, 1 and 5 days after the application. The second and third applications will not be monitored. A total of 28 samples will be collected for analysis.

Distance of the samplers from the stations, the time of day for sampling, the duration of the sampling interval, and how many days post application to continue sampling will be determined from the results of the pilot study conducted earlier in 1988. Since it expected that it will be difficult to detect the methyl eugenol, these choices will be made to maximize the possibility of detection.

V. SAMPLING METHODS

All sampling will be performed using standard EHAP procedures (Sava, 1986). Replicate air samples will be collected using high volume air samplers calibrated at appropriate flowrates. XAD-2 resin will serve as the trapping medium. All air background and post application sampling periods will be a minimum of 4 hours. Air samples will be frozen at -70°F until delivered to the laboratory for analysis. Chain of custody records will be kept to document sample handling from sample container preparation through chemical analysis.

VI. STATISTICAL ANALYSIS

Air concentrations measured during monitoring will be analyzed as a two-factor repeated measures Analysis of Variance (ANOVA) with Application and Days-Post as the repeated factors, and the four stations as replicates. The ANOVA will show whether there is a significant accumulation of material over applications (main effect of Application), whether there is a significant build-up or decline of material over the days following application (main effect of Days-Post), or whether the behavior of the material over days is different after different applications (interaction of Application and Days-Post). The best-fitting model will be used to estimate mean concentration (and confidence limits) at each time point.

VII. ANALYTICAL METHODS/QUALITY CONTROL

Analytical method development and sample analysis will be performed by the CDFA laboratory. Air samples will be analyzed for methyl eugenol. One solvent blank, 1 matrix spike sample and 2 replicate injections for 1 positive sample will be analyzed with each extraction set.

VIII. BUDGET

The following expenses have been calculated based upon an eradication program which would take place in southern California. The budget does not include the expenses incurred by two employees to be furnished by the local Pest Detection field office.

Personnel Expenses:	
1 Seasonal employee at $8/hr for 12 days	$ 768
Operating Expenses:	
Per Diem --	
2 employees x 12 days x $82/day	1968
Airfare (LA) --	
2 employees x 3 trips x $150/trip	900
1 employee x 1 trip x $150/trip	150
Vehicles --	
2 vehicles x 1000 mi/ea x $0.25/mi	500
Chemistry --	
2 applications x 4 stations x 4 days (background, 0, +1, +5 for 1st application and 0, +1, and +5 for last) = 28 samples total x $150 each	4200
Total Costs:	$ 8486